

REMARKS

Reconsideration is requested.

Claims 64-87 are pending. Applicant acknowledges with appreciation allowance of claims 71-79.

The disclosure is objected to because of alleged informalities in the related application information section. Such section of the specification has been appropriately updated. Accordingly, withdrawal of the objection is requested.

Claims 64-65 and 80-82 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wei (U.S. Patent No. 4,942,449). The Office Action also asserts that “a raised mandril and a layer of structural material forming an edge” deals with the issue of integrating multiple pieces into one piece. These assertions are respectfully traversed.

Claim 64 recites, in part, a raised mandril over the substrate, the raised mandril being raised out from the substrate and having at least one edge substantially perpendicular to the substrate and having at least one beveled edge; and a layer of structural material forming an edge defined feature on the at least one perpendicular edge. (Emphasis Added)

Wei at Figure 7 does not disclose the above-recited features of claim 64. For example, the Office Action asserts an upper portion 10 of Wei’s substrate as being analogous to the raised mandril of claim 64. Even assuming for argument purposes such assertion to be true, the upper portion 10 does not have at least one edge substantially perpendicular to the substrate. “Perpendicular” is

generally defined by one of ordinary skill in the art as “a line at right angles to another line or plane.” See, for example, Webster’s Dictionary. None of Wei’s Figures teach or suggest a raised mandril having at least one edge that is substantially perpendicular to the substrate.

In addition to the above-noted deficiencies, Wei fails to teach or suggest a layer of structural material forming an edge defined feature on the at least one perpendicular edge. The Office Action asserts material 14b to be analogous to the layer of structural material of claim 64. Wei at Figure 7 merely discloses depositing material 14b which is in the form of a bird’s beak over a portion of the substrate 10.

Applicant has defined an edge defined feature as “a material that remains as a residual wall after anisotropic etching.” See page 2, lines 20-22 of the present specification.

As Wei fails to teach or suggest a mandril having at least one edge that is substantially perpendicular to the substrate, Wei cannot possibly teach or suggest a layer of structural material forming an edge defined feature on the at least one perpendicular edge as recited in claim 64. Moreover, Wei does not even remotely suggest what an edge defined feature would be.

At least for the above-noted reasons, claim 64 would not be obvious over Wei.

Further, Applicant respectfully notes that under MPEP §706.02(j), entitled “Contents of a 35 U.S.C. 103 Rejection,” it states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

MPEP § 2143 - § 2143.03 sets forth decisions pertinent to each of these criteria. MPEP § 2143.01 states that "THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE". This MPEP section further states that "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)."

For example, as demonstrated above, Wei's alleged upper portion 10 does not show a mandril having at least one edge substantially perpendicular to the substrate. If Wei's upper portion 10 were to be modified to have at least one edge substantially perpendicular to the substrate, then such

modification would have to be performed in hindsight and using Applicant's specification as a template. Such hindsight reconstruction is impermissible.

Further, assuming for argument purposes, even if Wei were to be modified to form a mandril having at least one edge that is substantially perpendicular to the substrate, then such modification would destroy Wei's intended purpose. See, for example, Wei's col. 5, lines 20-25 which discloses "the structure (of Figs. 6, 7) is characterized in that the bird's beak region includes a thin layer of field oxide It is this structure which reduces the sensitivity of the device to radiation conditions." Thus, if the bird's beak structure as shown in Fig. 7 were to be removed and replaced with an edge that is substantially perpendicular to the substrate, then such a structure is not intended by Wei and frustrates reducing the sensitivity of the device to radiation conditions.

Support for the claimed invention may be found at least at Figures 7A-7B, 17A-17B, and the corresponding disclosure on pages 8-9 of the present specification.

In view of the above, Applicant respectfully submits that claim 64 is patentably distinct and non-obvious over Wei. Claim 64 is therefore allowable.

As claim 65 depends on claim 64, it too is allowable.

Claim 80 is allowable at least for similar reasons set forth above with respect to claim 64 in addition to its own independently recited claim features.

As claim 82 depends on claim 80, it too is allowable.

In view of the above, Applicant submits that claims 64-65 and 80-82 are allowable over Wei.

Claims 64-70 and 80-87 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sakamoto (JP 406120483). This rejection is respectfully traversed.

Claim 64 recites, in part, a raised mandril over the substrate, the raised mandril being raised out from the substrate and having at least one edge substantially perpendicular to the substrate and having at least one beveled edge; and a layer of structural material forming an edge defined feature on the at least one perpendicular edge. (Emphasis Added)

The Office Action asserts that Sakamoto's Figures 1-9 disclose all the recited elements of claim 64. Specifically, the Office Action alleges that Sakamoto discloses a substrate 1, a raised mandril 2, and a beveled edge 1a in support of its assertion.

Sakamoto does not even remotely suggest what an edge defined feature would be. Applicant has defined an edge defined feature as "a material that remains as a residual wall after anisotropic etching." See page 2, lines 20-22 of the present specification.

The Examiner asserts Sakamoto's temperature compensating plate 2 as being analogous to a raised mandril as well as a layer of structural material that forms an edge defined feature on the perpendicular edge. How can the temperature compensating plate 2 be the alleged raised mandril as well as a

layer of structural material that is formed on the perpendicular edge of the mandril? None of Sakamoto's figures disclose such.

Even if one attempts to arrive at the claimed invention by reconstructing Sakamoto, not only would such attempts be unsuccessful, but would also destroy or frustrate Sakamoto's intended purpose. For example, Sakamoto uses the temperature compensating plate 2 as an anode electrode. If one were to deposit a layer of structural material over the temperature compensating plate 2, such would not only frustrate the intended functionality of Sakamoto, but would also fail to form an edge defined feature as recited in the claimed invention. None of Sakamoto's figures show a layer of structural material forming an edge defined feature on the at least one perpendicular edge.

In view of the above, claim 64 is non-obvious over Sakamoto. Claim 64 is therefore allowable.

As claims 65-69 depend on claim 64, they too are allowable.

For example, claim 65 further recites that the bevel is less than or equal to about 45 degrees. With respect to claim 65, page 4, second paragraph of the Office Action asserts that it would have been obvious to one of ordinary skill in the art to use the raised mandril and the layer of structural material forming an edge as "merely a matter of obvious engineering choice." This assertion is respectfully traversed.

Applicant respectfully submits that "would have been obvious" or "would have been determinable" or "obvious to try modification" is not a proper test for determining obviousness. See *In re Antonie*, 559 F. 2d 618, 195 USPQ 6, 9

(CCPA 1977). In the Wei and Sakamoto references, there is no suggestion of what direction the alleged experimentation should follow and, accordingly, because the result-effective variable is not known to be result-effective, numerous attempts at variations could be made before arriving at the desired improvement.

The general rule regarding optimum ranges or variables is that the discovery of an optimum value of a variable in a known process is presumed to be obvious if it is discovered through routine experimentation. See *In re Aller*. However, if the parameter to be optimized is not recognized to be a result-effective variable, then optimization of such parameter in a known process is not presumed to be obvious. That is, the prior did not optimize, or suggest to optimize, the parameter that was optimized by the claimed invention. See *In re Antonie*, supra.

In the present case, the references of record are not even remotely relevant to problems caused by additional mask and etch steps when forming edge defined features and therefore cannot possibly suggest solutions to overcome the unaddressed problems. Accordingly, the references cannot even begin to suggest experimenting with the bevel angle in order to optimally etch the structural material so as to reduce the number of mask and etch steps.

In addition to the above, one of ordinary skill in the art would expect to use the claimed device by removing the raised mandril leaving the edge defined feature to overcome the disadvantages associated with conventional formation of edge defined features. See page 22, lines 5-16 of the present specification.

Sakamoto could not be used in the manner described above as the alleged mandril 2 and the alleged edge defined feature are formed as a single piece. Accordingly, those of ordinary skill in the art would not find Sakamoto to suggest the claimed invention.

In view of the above, claim 65 is believed to be allowable over the Wei and Sakamoto references.

Claim 80 is allowable over Sakamoto at least for similar reasons set forth above with respect to claim 64 in addition to its own independently recited claim features.

As claims 81-87 depend on claim 80, they too are allowable.

Further, claim 82 is patentably distinct over the Wei and Sakamoto references at least for similar reasons set forth above with respect to claim 65.

In view of the above, claims 64-70 and 80-87 are allowable over Sakamoto.

Applicant herein establishes adequate reasons supporting allowance of all pending claims and requests allowance of all such claims in the next Office Action.

Respectfully submitted,

Dated: June 11, 2004 By: K. S. K.
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